

MARMC Fab Lab Part of National Week of Making



By Aaron Strickland, Public Affairs Specialist

Mid-Atlantic Regional Maintenance Center's Fabrication Laboratory, or Fab Lab, is participating in the Third Annual National Week of Making to recognize the military's best innovation initiatives.

A project coordinated by the Fab Lab is slated to be featured this June during the White House's Third Annual Week of Making, part of the National Maker Fair in the nation's capital.

The annual fair attracts innovative projects from people of all ages in Science, Technology, Education and Mathematics.

The Fleet Design Challenge, known better as Project Apollo, solicited ideas from Sailors at sea, as well as all military members, to create their own ideas to test out at MARMC, according to its Fab Lab officer, who said Project Apollo is more about the idea than how well it's been fleshed out.

"They didn't even have to submit finalized ideas," Lt. Todd Coursey said. "It could be as simple as a drawing on a bar napkin or it could be completed, ready to 'print'."

The entries, 18 from the military, are ideas for innovation using Fab Lab's 3-D printers. Some are money savers, some are technology-stretching uses for the printer. The ideas were submitted December - February at The Hatch, a blog for sharing Navywide ideas and ingenuity, run by the office of the Secretary of the Navy.

Coursey's judges are looking for the best project in three different criteria: ingenuity, how quickly the design can be sent to ships at sea, and most votes from The Hatch. Each category winner also will be invited to the Fab Lab, where the Sailors will build a 3-D printer suited for the design and will print a finished product.

The top three projects will be judged April 21, Fab Lab's first anniversary, and the day MARMC hosts the Full STEAM (Science, Technology, Engineering, Arts and Mathematics) Ahead Fair with Old Dominion University, Nauticus, Combat Systems Direction Activity Dam Neck, Huntington Ingalls Industries, Norfolk Naval Shipyard, and Space and Navy Warfare Systems Command (SPAWAR).



Here are a few examples of submissions:

- * A fabricated alignment tool that would slide over the end of the SLQ-32 Direction Finding Receiver (DFR), enabling ships force to replace radomes with the correct angle and spatial requirements.

- * A Design and prototype to the shipboard TV-DTS's (Television-Direct-to-Sailor) feed horn bracket support. Without the bracket, the TV-DTS antenna loses its focus on its satellite signal feed. The entire assembly would cost more than \$2,800.

- * The plastic housing adapters attached to the side of P7100 HYDRA radios. Once broken the entire adapter cable is useless. USS Harry S. Truman (CVN 75) Sailors, using a mini Fab Lab developed by MARMC, prototyped and produced a clip that attaches to the antenna, protecting the adapter cable, and saving more than \$600. Truman replaces seven adapter cables a month.

The winning entries will be highlighted during the National Week of Making, mid-June.

Project Apollo is also challenging Sailors to work toward a CNO initiative: hyper-velocity learning - using technology to teach how to use that technology.

"Technology is exponentially increasing on itself," Coursey said. "We want to use the Fab Lab to expose people to new technology."

Coursey is hoping through initiatives such as Project Apollo he can use Sailors' ideas to move ship's maintenance into the future sooner. He said hyper-velocity learning includes using

problem based learning, massive open online courses (MOOCs), mentoring, education and training to empower Sailors to provide ideas and innovations in the rapidly shifting landscape of the digital age.

"The Fleet Design Challenge is more framed around accelerating exposure of technology to the warfighter -- allowing the warfighter direct input on how best to use it instead of the traditional way of taking technology and maturing it," Coursey said. "By that time it's been years. This flips the process and says 'hey this is what's new.' How can you use it?"

He envisions the Fab Lab reaching into other emerging technologies, such as augmented reality, where Sailors can be exposed and subsequently leverage technology.

"I can already pull out my smart phone, scan the cup in my hand, put that image into a CAD (computer aided design) program and print it," Coursey said, referring to the 3-D printers in the Fab Lab. "I'd like to see the day when I can take an iPod up to a circuit breaker on a ship, look at it and the iPod reports on its PMS (planned maintenance system) cycle, the MRC (maintenance requirement card), repair videos and tells me how and when to perform its maintenance."

For now, Project Apollo is tapping into Sailor ingenuity and weaving that into modern technology. Is it getting the cart ahead of the horse?

"No, it's like telling the cart it can fly," Coursey said.